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ABSTRACT

The overwhelming majority of American adults support environmental education being taught in schools but teachers wanting to include environmental education within their classrooms face several formidable challenges. Instructional materials are widely scattered and are often of questionable quality. Though not an exhaustive list of what is available, the information provided in this digest represents a wide range of resources as starting points in the quest for information on environmental education. The list is organized by the following categories: (1) "Finding Instructional Materials"; (2) "Selecting Instructional Materials"; (3) "State and National Standards"; and (4) "Quality of Materials." (CCM)

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The overwhelming majority of American adults support environmental education being taught in schools (National Environmental Education and Training Foundation, 1997), but teachers wanting to include environmental education within their classrooms face several formidable challenges. Instructional materials are widely scattered and are of variable quality; the conceptual foundation for environmental education spans several academic disciplines; until recently there have been no broadly endorsed standards for curricular content; and state requirements for environmental education are highly variable and generally sketchy. These challenges, however, afford a unique opportunity for informed teachers and schools; they have enormous latitude in deciding what is to be taught and how it is to be taught. Anyone needing basic information on environmental education and its goals can refer to *Environmental Education at a Glance* (Call 1-800-825-5547, ext. 32).

Finding Instructional Materials

The first challenge in selecting instructional materials is finding them. In addition to familiar publishing houses, many corporations, professional associations, advocacy groups, and government agencies produce environmental education materials. Suggestions on where to look for instructional materials are offered in a guide for bringing environmental education into the classroom (Bones, 1994). Suggested places to look include:

- *Local Resources*, including County Cooperative Extension Services; nature centers, parks, and museums; local libraries, government offices; institutions of higher education; local chapters of professional organizations; and local utility companies.
- *State and Regional Resources*, including state departments of natural resources; regional Environmental Protection Agency offices; and state department of education offices for environmental or energy education.
- *Environmental education offices of federal agencies*, including the Department of Education, Environmental Protection Agency, Department of Energy, Department of Agriculture, Department of Interior, Department of Health and Human Services, National Science Foundation, National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, and Tennessee Valley Authority.
- *Non-Profit Organizations*, including The Sierra Club, The National Wildlife Federation, and The Friends of the Earth.
- *Clearinghouses and Resource Centers*, including the ERIC Clearinghouse for Science, Mathematics, and Environmental Education ((800) 276-0462, *http://www.ericse.org*), Renew America Environmental Success Index (*http://solstice.crest.org/sustainable/renew_america/*), and Pembina Institute for Appropriate Development (*http://www.piad.ab.ca/publications.html*). A directory of information providers is available from the EETAP Resource Library (contact *heimlich.1@osu.edu*).
- *Print Resources*, including *The Environmental Education Collection: A Review of Resources for Educators* (Vols. 1-3) (North American Association for Environmental Education (NAAEE), 1997 & 1998), *The Environmental Education Teacher Resource Handbook: A Practical Guide for Teaching K-12 Environmental Education* (Wilke, 1993), and *A Guide to Curriculum Planning in Environmental Education* (Engleson & Yockers, 1994).
- *Online Information*, including EELink (*http://eelink.net/*), EcoNet (*http://www.igc.org:80/igc/en/*), EnviroLink (*http://www.envirolink.org/*), National Library for the Environment (*http://www.cnie.org/nle/*), EPA Environmental Education Center (*http://www.epa.gov/teachers/*), Environmental Education Internet Sites (*http://www.epa.gov/enviroed/resources.html*), Exploring the Environment (*http://www.cotf.edu/ete*), Sharing Environmental Education Knowledge (SEEK) (*http://www.seek.state.mn.us/*) and the Environmental Organizations WebDirectory (*http://www.webdirectory.com/*).

Selecting Instructional Materials

In selecting instructional materials, environmental educators must carefully consider three primary issues: (a) alignment of environmental education topics and content with national standards, state curriculum frameworks, and existing courses of study; (b) professionally accepted criteria for judging the quality of materials; and (c) the needs, interests, and environmental circumstances of local students.

State and National Standards

National standards for curricular content have been developed in several subject areas, and most states are revising or updating state curriculum frameworks to reflect national standards. Schools will be using state frameworks to design or revise courses and programs. When selecting materials for school environmental education programs, schools should consider any state curriculum frameworks or guidelines having relevance to environmental education.

To review selected state science frameworks online, see *http://www.enc.org/reform/*. For national guidelines and standards in environmental education, see *Excellence in Environmental Education – Guidelines for Learning (K-12)*, (NAAEE, 1998). Curriculum standards for social studies are online at *http://www.ncss.org/standards/toc.html*. Two curricular strands in particular have implications for environmental education: "Global Connections" and "People, Places, and Environment." The *National Science Education Standards* are available online at *http://www.nap.edu/readingroom/books/nses/html/*. Standards regarding "Personal and Social Perspectives" are particularly relevant to environmental education, and include topics such as human population, natural resources, environmental quality, and environmental changes.

Because environmental education cuts across traditional curriculum boundaries, many endorse the idea of using the environment as an integrating context for learning. For more on this idea, see *http://www.seer.org/seer/Pages/GAP.html* where an overview of *Closing the achievement gap: Using the environment as the integrating context for learning* is provided by the State Education and Environment Roundtable.

Quality of Materials

To assist educators in judging the quality of instructional materials, the NAAEE has produced a guide, *Environmental education materials: Guidelines for excellence* (1996) that presents six key characteristics of quality materials. Guidelines are presented for each of the key characteristics, along with indicators for evaluating materials. Following is an abbreviated outline of the key characteristics and guidelines, accompanied by examples of materials exhibiting some of the quality indicators for each key characteristic.

1. Fairness and Accuracy: Environmental education materials should be fair and accurate in describing environmental problems, issues, and conditions, and in reflecting the diversity of perspectives on them.
   - 1.1 Factual accuracy.
   - 1.2 Balanced presentation of differing viewpoints and theories.
   - 1.3 Openness to inquiry.
   - 1.4 Reflection of diversity.

   Example: *A World in Our Backyard: A Wetlands Education and Stewardship Program* (Grades 6-8, see: *http://www.envmedia.com*)
2. Depth: Environmental education materials should foster awareness of the natural and built environments; an understanding of environmental concepts, conditions, and issues; and an awareness of the feelings, values, attitudes, and perceptions at the heart of environmental issues, as appropriate for different developmental levels.
   - 2.1 Awareness.
   - 2.2 Focus on concepts.
   - 2.3 Concepts in context.
   - 2.4 Attention to different scales.

   Example: *Project Learning Tree* (Grades PreK-8; American Forest Foundation, 1993)
3. Emphasis on Skills Building: Environmental education materials should build lifelong skills that enable learners to prevent and address environmental issues.
   - 3.1 Critical and creative thinking.
   - 3.2 Applying skills to issues.
   - 3.3 Action skills.

   Example: *Energy, Economics & the Environment: Case Studies and Teaching Activities for Middle School* (Grades 6-8; Indiana Department of Education, 1994)
4. Action Orientation: Environmental education materials should promote civic responsibility, encouraging learners to use their knowledge, personal skills, and assessments of environmental issues as a basis for environmental problem solving and action.
   - 4.1 Sense of personal stake and responsibility.
   - 4.2 Self-efficacy.

   Example: *Environmental Education in the Schools: Creating a Program that Works* (Grades K-Adult; Braus & Wood, 1994)
5. Instructional Soundness: Environmental education materials should rely on instructional techniques that create an effective learning environment.
   - 5.1 Learner-centered instruction.
   - 5.2 Different ways of learning.
   - 5.3 Connection to learners' everyday lives.
   - 5.4 Expanded learning environment.
   - 5.5 Interdisciplinary.
   - 5.6 Goals and objectives.
   - 5.7 Appropriateness for specific learning settings.
   - 5.8 Assessment.

   Example: *Global Systems Science Series* (Several individually titled guides, Grades 9-12; Lawrence Hall of Science, 1998)
6. Usability: Environmental education materials should be well designed and easy to use.
   - 6.1. Clarity and logic.
   - 6.2 Easy to use.
   - 6.3 Long lived.
   - 6.4 Adaptable.
   - 6.5 Accompanied by instruction and support.
   - 6.6 Make substantiated claims.
   - 6.7 Fit with national, state, or local requirements.

   Example: *The Cycles for Science Series* (Curriculum supplements for grades 9-12; Rogers, 1996)

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